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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/884,463	06/20/2001	Dov Ingman	50761.010100	9653
22191	7590	12/03/2004	EXAMINER	
GREENBERG-TRAURIG 1750 TYSONS BOULEVARD, 12TH FLOOR MCLEAN, VA 22102			KANG, JULIANA K	
			ART UNIT	PAPER NUMBER
			2874	

DATE MAILED: 12/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/884,463

Applicant(s)

INGMAN ET AL.

Examiner

Juliana K. Kang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/7/04
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-30, 32-52 and 54-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 46 is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-30, 32-35, 37-45, 47-52 and 54-58 is/are rejected.
- 7) ☒ Claim(s) 36 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. Applicant's communication filed on September 7, 2004 has been carefully studied by the Examiner. In view of further consideration a new rejection is applied to the pending claims. This action is **not** made final.

Claim Objections

2. Please note that there isn't claim 53. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1-5, 7, 8, 33, 34, 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Imamura et al (U.S. Patent 6,519,401 B1).**

Regarding claims 1, 7, 8, and 33, Imamura et al disclose an optical fiber comprising: a core (1); and a cladding layer (3, the light diffusive layer). The cladding layer (light diffusive layer) comprises a fluorine polymer along with titanium dioxide (metallic oxide) having a particle size of about 10nm to 300µm. As applicant stated in the specification page 12 paragraph [00077] titanium oxide particles are hydrophilic. Thus Imamura et al disclose the all the claimed limitations.

Regarding claims 2, 3, and 42, Imamura et al's fluorine polymer in the light diffusive layer used as a binder is a filler.

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Regarding claims 4, 5, and 34, Imamura et al disclose an overlaid layer (a protective layer 4) including Teflon (see column 7 lines 47-49).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1-35, 37, 38, 42-45, 47-52, and 54-58 are rejected under 35**

U.S.C. 103(a) as being unpatentable over Tsubaki et al (U.S. Patent 5,790,742).

Regarding claims 1, 6, 7, 10, 11, 33, 35, 48, 52, 54, 55 and 58, Tsubaki et al disclose an optical fiber comprising a core made of quartz glass (silica glass, see column 4 line 67); and a cladding layer comprised of at least two layers (2a, 2b) wherein a first clad layer (2a) can be made of acrylic resins (see column 6 lines 20-25, acrylic resins is hydrophilic resins [see IGA et al US 2001/0018568 A1 paragraph 0051]) and a second clad layer (2b) is made of hydrophobic silica aerogel particles (see column 5 lines 5-15 and column 6 lines 8-9). However, Tsubaki et al do not clearly state that the first clad layer is made of nano-particles. Tsubaki et al teaches that using nano-particles provide transparency and minimize optical loss by absorption or scattering of light (see column 5 lines 15-19). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use nano-particles for the

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first clad layer to provide transparency and minimize optical loss for better efficiency in optical transmission. The hydrophilic first clad layer and the hydrophobic second clad layer inherently have different hydrophobicity characteristics.

Regarding claim 8, since claim 8 only further limits the metallic oxide which is one of the cladding layer nano-particles wherein the nano-particles can also be silica nano-particles, the claimed limitations are essentially disclosed by Tsubaki et al.

Regarding claims 2, 42, 49 and 51, Tsubaki et al disclose the cladding layer comprising a filler (air, see column 5 line 54).

Regarding claims 4 and 34, Tsubaki et al disclose an over clad layer (5, see column 6 lines 26-28).

Regarding claim 14, Tsubaki et al disclose that the cladding layer (nano-particles having air) can be made of resins (see column 6 line 24).

Regarding claims 16, 17, 19-21 and 56, as described above Tsubaki et al teach the claimed invention including a plurality of cores (1); and a cladding layer (2a or 2b) wherein the plurality of cores are embedded within the second clad layer (see Fig. 6D and see Fig. 10c). However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the common first cladding layer for the plurality of cores instead of individually coated cores in Tsubaki et al in order to reduce the manufacturing cost and the process.

Regarding claims 22, 23, 25, 26, 27, 29, 30, 32, 43 and 57, as described above Tsubaki et al teach the claimed invention except a substrate. Placing an optical fiber on a substrate is well known in the art to secure or to support an optical fiber. Thus, it

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would have been obvious to one with ordinary skill in the art at the time the invention was made to place Tsubaki et al's optical fiber on a substrate to either secure or support the optical fiber for further coupling with other optical elements. Tsubaki et al disclose having a plurality of stacked cores (Fig. 6D) thus having a plurality of stacked waveguides on a substrate would also have been obvious to one with ordinary skill in the art.

Regarding claims 38 and 41, Tsubaki et al teach the claimed method limitations (see column 5 lines 32-39).

Regarding claims 12, 13, 37, 44, 45 and 47, as described above Tsubaki et al teach the first cladding (inner cladding) made of hydrophilic material and the second cladding (outer cladding) made of hydrophobic silica material. Tsubaki et al does not limit the cladding material to any specific material and Tsubaki et al further teach using different materials for the cladding layer (see column 6 lines 20-25). Metallic oxide nano-particles are known as hydrophilic material in the art. Thus using metallic oxide nano-particles or any other material having hydrophilic characteristic including molybdenum disulfide in Tsubaki et al would have been obvious to one having ordinary skill in the art as long as the particles provide the hydrophilic characteristics.

Regarding claims 3, 18, 24 and 28, as described above, Tsubaki et al disclose the cladding layer including silica nano-particles comprising air which provides more flexibility (see column 5 lines 57-59). Claimed materials such as polymer, synthetic oil, poly-siloxane and Teflon are well known materials used for the optical fiber cladding or coating layer to increase the flexibility of the optical fiber. Thus, one with ordinary skill in

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the art would have easily recognize the use of other materials such as polymer, synthetic oil, poly-siloxane and Teflon in Tsubaki et al to improve the flexibility of the optical fiber.

Regarding claim 5, as described above Tsubaki et al disclose the overclad layer. However, Tsubaki et al do not specifically teach Teflon. Tsubaki et al teach that overclad material is not particularly limited to any specific material (see column 6 lines 26-36). Teflon is a well-known material used in an optical fiber art as a coating material. Thus, it would have been obvious to one with ordinary skill in the art at the time the invention was made to use a well known coating material such as Teflon in Tsubaki et al since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice.

Regarding claims 15 and 50, using thixotropic material is well known in the art to block moisture. Tsubaki et al's cladding layer prohibits moisture or water to enter and Tsubaki et al further teach that the material used for the clad layer is not limited to any particular material. Thus it would have been obvious to one with ordinary skill in the art to use any type of moisture blocking material including thixotropic material in Tsubaki et al as long as the cladding layer blocks moisture.

7. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsubaki et al as applied to claim 33 above, and further in view of Kanda et al (U.S. Patent 4,740,055).

As described above, Tsubaki et al disclose coating an optical fiber core with nano-particles. However, Tsubaki et al do not positively teach the claimed coating methods. Kanda et al teach coating an optical fiber with polymer particles having particle sizes of 10nm to 6000nm (see column 3 line 1) wherein the particles are prepared using an azeotropic distillation (drying) method (see column 2 lines 42-48). Thus, it would have been obvious to one with ordinary skill in the art at the time the invention was made to use any particle coating method including Kanda et al's azeotropic distillation method in Tsubaki et al in order to coat the fiber core with nano-particles.

8. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsubaki et al as applied to claim 33 above, and further in view of Kanda et al (U.S. Patent 4,740,055).

Tsubaki et al disclose coating an optical fiber core with nano-particles. However, Tsubaki et al do not positively teach the method step of drawing. Freidinger et al teach coating an optical fiber by drawing a coating material in the form of paste. Thus, it would have been obvious to one with ordinary skill in the art at the time the invention was made to use any coating methods including a drawing method in Tsubaki et al as taught by Freidinger et al to coat an optical fiber with a coating material.

9. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsubaki et al as applied to claim 33 above, and further in view of Minemoto et al (U.S. Patent 5,699,461).

As described above, Tsubaki et al disclose coating an optical fiber core with nano-particles. However, Tsubaki et al do not positively recite claimed coating methods. Minemoto et al teach coating the fiber by applying the optical fiber with a polymer paste (filler) comprising fine particles and then drying (see column 13 lines 46-54). Thus, it would have been obvious to one with ordinary skill in the art to use any coating method including the method of applying and drying in Tsubaki et al as taught by Minemoto et al to coat the fiber with polymer that includes fine particles.

Allowable Subject Matter

10. Claim 46 is allowed. Applicant amended the claim to include the allowable subject matter indicated in the previous office action.

Claim 36 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The indication of allowable subject matter is stated in the previous office action.

Response to Arguments

11. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

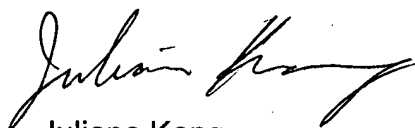
12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. IGA et al (US 2001/0018568 A1) teach that acrylic resins is hydrophilic resins (see [0051]). Campion et al (U.S. Patent 6,201,917 B1) teaches using silica dopes with alumina for a cladding layer. DE 2605395 teaches using a mixture of hydrophobic and hydrophilic power in an electric cable to protect the cable from water entry into and migration along the cable. Girgis et al (U.S. Patent 6,087,000) teaches using hydrophilic and hydrophobic material in an optical cable.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juliana K. Kang whose telephone number is (571) 272-2348. The examiner can normally be reached on Mon. & Fri. 10:00-6:00 and Tue. & Thur. 10:00-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Juliana Kang', with a stylized flourish at the end.

Juliana Kang
November 29, 2004